said data model comprising one or more orders representing one or more materials being consumed and/or created in said manufacturing sequence, said orders being linked such that the order that consumes a material follows the order that creates the respective material in said manufacturing sequence,

each of said orders comprising one or more activities representing materials being processed by said manufacturing resources, said activities being linked chronologically within each order, said link between activities further comprising information about the temporal constraints between said activities.

Determining the start time for the first activity of said manufacturing sequence and using said temporal constraints in said data model to calculate the start times for all of said activities that are performed on a particular one of said manufacturing resources.

22. (New) The method of claim 21, wherein said data model further comprises information about temporal constraints between said activities in different orders in said manufacturing sequence.

23. (New) The method of claim 21, further comprising the steps of

Adjusting said start time for one or more of said activities in said manufacturing sequence;

Using said data model to dynamically re-calculate said start times for one or more of said activities on subsequent ones of said manufacturing resources.

24. (New) The method of claim 21, further comprising the steps of optimizing the use of said manufacturing resources in real time by dynamically allocating certain of said

manufacturing resources to other uses based on the calculated availability of said manufacturing resources in said manufacturing sequence.

25. (New) The method of claim 21, further comprising the steps of determining the quantity of and time for said materials being supplied to each of said manufacturing resources by providing the start time for the first of said activities of the first of said orders, and calculating said start time for each of said orders that consumes said materials using said information about temporal constraints between activities;

supplying the necessary quantity of said materials to each of said manufacturing resources in said manufacturing sequence at said determined times based on said determined time for and quantity of said materials for respective ones of said manufacturing resources.

26. (New) The method of claim 25, further comprising the step of adjusting said start time for one of said activities based on the unavailability of a particular one of said manufacturing resources, and re-calculating the time at which materials need be supplied to each of said manufacturing resources based on said adjusted start time.

27. (New) The method of claim 21, wherein said data model further comprises input nodes representing materials consumed by an order and output nodes representing materials created by an order.

28. (New) The method of claim 27, further comprising the step of determining the bill of materials for an output material by identifying all of the input nodes corresponding to the output node for said material.

29. (New) The method of claim 22, further comprising the step of determining all orders for a specific material and storing said orders in a database of order information.

30. (New) A method for monitoring the use of resources and materials in a manufacturing sequence, comprising the steps of:

providing a data model representing said manufacturing sequence,

said data model comprising one or more orders representing one or more materials being consumed and/or created in said manufacturing sequence, said orders being linked such that the order that consumes a material follows the order that creates the respective material in said manufacturing sequence,

each of said orders comprising one or more activities representing materials being processed by manufacturing resources, said activities being linked chronologically within each order, said link between activities further comprising information about the temporal constraints between said activities, and temporal constraints between activities in different orders in said manufacturing sequence.

Determining based on the start time for the first order whether a specific resource is in use at any given time during said manufacturing sequence.

31. The method of claim 30, further comprising the step of determining the time and duration for all of said activities on a particular one of said manufacturing resources.